Bachelor in Chemistry **Module Handbook**

Module name:	Practicum of Organic Chemistry
Module level, if applicable:	Undergraduate
Code:	33250002
Sub-heading, if applicable:	-
Classes, if applicable:	-
Semester:	3^{rd}
Module coordinator:	Dr. Fera Kurniadewi, M.Si.
Lecturer(s):	Dr. Fera Kurniadewi, M.Si. Dr. Hanhan Dianhar, M.Si. Elsa Vera Nanda, M.Si.
Language:	Bahasa Indonesia (Indonesian Language)
Classification within the curriculum:	Compulsory Courses in the first year (3rd semester) Bachelor Degree
Teaching format/class hours per week during the semester	Learning activity can be carried out in the form of **Laboratory activity: 340 minutes per week** - Safety induction: 1 time (MSDS, safety equipment, waste disposal) - Preparation: 1 time (chemical preparation and experiment equipment) - Laboratory work: 10 times (4 main topics that consist of 14 Subtopics topics, i.e pretest, practicum activity, and writing report) **Discussion:** 340 minutes for 2 times (presentation and discussion of practical results) **Examination**: 340 minutes for 2 times (mid and final examination)
Workload:	

Type	CU	Laboratory Activity	Discussion	Examination
P	2	68 h (2.256 ECTS)	11.33 h (0.372 ECTS)	11.33 h (0.372 ECTS)

Credit points:	2 CU (3 ECTS)
Prerequisite course(s):	Organic Chemistry

Program intendedlearning outcomes	PLO 3. Able to demonstrate performance independently or as part of a team in a professional and measurable manner by applying interdisciplinary knowledge and skills, critical thinking, and creatively in the context of being a lifelong learner. PLO 5. Able to master knowledge of chemistry (organic, inorganic, analytical, physical and biochemical chemistry) which includes structure, properties, function, change, energy and dynamics, identification, separation, characterization, transformation, and synthesis of micromolecular chemicals and their application. PLO 7. Understand operational knowledge about functions, how to operate chemical instruments, as well as analysis of data and information from these instruments. PLO 10. Able to carry out laboratory and research work by paying attention to the safety and security of laboratory work and applying responsible scientific behavior.
Course outcomes:	CLO1. Students are able to demonstrate basic organic chemistry laboratory techniques which include separation, purification, synthesis, and identification of organic molecules.
Content:	**Students will learn about:** 1. Separation method 1.1 Simple and fractional distillation 1.2 Recrystallization 1.3 Sublimation 1.4 Liquid-liquid extraction 2. Chemical reactions 2.1 Nucleophilic Substitution 2.2 Radical Coupling 2.3 Elimination Reactions 2.4 Methods of Identification of Organic Compounds 2.5 Oxidation-Reduction Against Carbonyl 2.6 Enol-Enolate Reaction 3. Synthesis 3.1 Multistep Synthesis 3.2 Synthesis of Carboxylic Acid Derivatives 4. Natural product chemistry 4.1 Phytochemical Screening 4.2 Isolation of Secondary Metabolites

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<tr><td>Study/exam achievements:</td><td>Examinations are conducted as Unit Tests. There are two-unit tests, each covers 6-7 topics. The final marks are derived from unit tests (70%) and structured tasks (30%).

<table><tr><th>Aspect</th><th>(%)</th></tr><tr><td>Attitude</td><td>15</td></tr><tr><td>General skills</td><td>10</td></tr><tr><td>Special skills</td><td>50</td></tr><tr><td>Knowledge</td><td>25</td></tr><tr><td>Final score</td><td>100</td></tr></table></td></tr>
<tr><td>Media</td><td>Laboratory equipment, Projectors, Practical videos, Learning Management System (MsTeams or Alkana)</td></tr>
<tr><td>Literatures</td><td>1. Williamson, K. L., Masters, K. M. 2011. Macroscale and Microscale Organic Experiments. Belmont,CA USA: Brooks Cole
2. Fryhle, C. B., Snyder, S. A., Solomons, T. W. G. 2017. Organic Chemistry. NJ USA : John Wiley & Sons, Inc.
3. Jones, A. 2015. Chemistry: An Introduction for Medical and Health Sciences. Hoboken, NJ USA : John Wiley & Sons, Inc.
4. Anderson, A. M., Mitchell, M. S., and Mohan, R. S. . 2000. Isolation of Curcumin from Turmeric.Journal of Chemical Education. 77(3), 359
5. Banu, K. S., Cathrine, L. 2015. General Techniques Involved in Phytochemical Analysis.International Journal of Advanced Research in Chemical Science. 2(4). 25-32
6. MSDSs</td></tr>
</table>

PLO and CO mapping

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12
CO1			v		v		v			v		